

What is claimed is:

1. A magnet rotor having a back yoke provided on a rotary shaft and a permanent magnet arranged on an outer peripheral face of the back yoke, wherein

5        said back yoke is composed of an electromagnetic steel plate or by laminating a thin plate of an ordinary magnetic body and the outer peripheral face thereof is formed into polygon, of which each face is formed as a fitting plane,

10        said permanent magnet is composed of a plurality of magnet pieces having opposing planes in its inner faces corresponding to said fitting plane, respectively and

15        said permanent magnet is fixed to said back yoke by adhering said opposing planes of said magnetic pieces with said fitting planes of said back yoke and by press-setting a sleeve on the outer peripheral face of said permanent magnet.

2. The magnet rotor as claimed in claim 1, wherein a pair of nonmagnetic plates for holding said permanent magnet from both sides thereof are attached to said rotary shaft.

20        3. The magnet rotor as claimed in claim 1 or 2, wherein a step part formed lower than the outer peripheral face thereof is provided at both end parts in an axial direction of the outer peripheral face of said permanent magnet, and said sleeve is press-set in the step part.

25        4. The magnet rotor as claimed in any one of claims 1 to 3, wherein said permanent magnet is arranged in plurality in parallel in an axial direction thereof.

5. The magnet rotor as claimed in any one of claims 1 to 4, wherein said permanent magnets are bonded with a bonding agent said mutually neighboring

magnet pieces.

6. The magnet rotor as claimed in any one of claims 1 to 5, wherein said permanent magnet and said back yoke are bonded with a bonding agent having a low Young's modulus and a high coefficient of thermal expansion, such as a silicon rubber adhesive, or fixed with resin having a high Young's modulus, such as epoxy resin.

7. The magnet rotor as claimed in any one of claims 1 to 6, wherein said sleeve is made of carbon fiber reinforced plastic or nonmagnetic metal.

8. The magnet rotor as claimed in any one of claims 1 to 7, wherein said plate is made of stainless steel like SUS304 and nonmagnetic material such as Inconel.

9. The magnet rotor as claimed in any one of claims 1 to 8, wherein said permanent magnet is fixed to said back yoke, and after balance adjusting said rotary shaft based on a bearing part as reference, magnetized integrally with the rotary shaft by a magnetizing machine.

10. An AC machine with a high output having a ring part fixed to a housing, a tooth part extending from the ring part to the inside in a radial direction, a stator made up with a coil wound round the tooth part, and one of the magnet rotors as claimed in any one of claims 1 to 9 arranged in said ring part of the stator.